

**Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (Original): A seed comprising at least one set of the chromosomes of maize inbred line PH581, representative seed of said line having been deposited under ATCC Accession No. PTA-4432.

Claim 2 (Currently amended): A maize plant produced by growing the ~~F1 hybrid maize~~ seed of claim 1.

Claim 3 (Original): A maize plant part of the maize plant of claim 2.

Claim 4 (Original): An F1 hybrid maize seed produced by crossing a plant of maize inbred line designated PH581, representative seed of said line having been deposited under ATCC Accession No. PTA-4432, with a different maize plant and harvesting the resultant F1 hybrid maize seed, wherein said F1 hybrid maize seed comprises two sets of chromosomes and one set of the chromosomes is the same as maize inbred line PH581.

Claim 5 (Original): A maize plant produced by growing the F1 hybrid maize seed of claim 4.

Claim 6 (Original): A maize plant part of the maize plant of claim 5.

Claim 7 (Currently amended): An F1 hybrid maize seed comprising an inbred ~~corn~~ maize plant cell of inbred maize line PH581, representative seed of said line having been deposited under ATCC Accession No. PTA-4432.

Claim 8 (Original): A maize plant produced by growing the F1 hybrid maize seed of claim 7.

Claim 9 (Currently amended): The F1 hybrid maize seed of claim 7 wherein the inbred ~~corn~~ maize plant cell comprises two sets of chromosomes of maize inbred line PH581.

Claim 10 (Original): A maize plant produced by growing the F1 hybrid maize seed of claim 9.

Claim 11 (New): A maize plant having all the physiological and morphological characteristics of inbred line PH581, wherein a sample of the seed of inbred line PH581 was deposited under ATCC Accession Number PTA-4432.

Claim 12 (New): A process of producing maize seed, comprising crossing a first parent maize plant with a second parent maize plant, wherein one or both of the first or the second parent maize plants is the plant of claim 11, wherein seed is allowed to form.

Claim 13 (New): The maize seed produced by the process of claim 12.

Claim 14 (New): The maize seed of claim 13, wherein the maize seed is hybrid seed.

Claim 15 (New): A hybrid maize plant, or its parts, produced by growing said hybrid seed of claim 14.

Claim 16 (New): A maize seed produced by growing said maize plant of claim 15 and harvesting the resultant maize seed.

Claim 17 (New): A cell of the maize plant of claim 11.

Claim 18 (New): A seed comprising the cell of claim 17.

Claim 19 (New): The maize plant of claim 11, further defined as having a genome comprising a single locus conversion.

**Claim 20 (New):** The maize plant of claim 19, wherein the single locus was stably inserted into a maize genome by transformation.

**Claim 21 (New):** The maize plant of claim 19, wherein the locus is selected from the group consisting of a dominant allele and a recessive allele.

**Claim 22 (New):** The maize plant of claim 19, wherein the locus confers a trait selected from the group consisting of herbicide tolerance; insect resistance; resistance to bacterial, fungal, nematode or viral disease; yield enhancement; waxy starch; improved nutritional quality; male sterility and restoration of male fertility.

**Claim 23 (New):** The maize plant of claim 11, wherein said plant is further defined as comprising a gene conferring male sterility.

**Claim 24 (New):** The maize plant of claim 11, wherein said plant is further defined as comprising a transgene conferring a trait selected from the group consisting of male sterility, herbicide resistance, insect resistance and disease resistance.

**Claim 25 (New):** A method of producing a maize plant derived from the inbred line PH581, the method comprising the steps of:

- (a) growing a progeny plant produced by crossing the plant of claim 11 with a second maize plant;
- (b) crossing the progeny plant with itself or a different plant to produce a seed of a progeny plant of a subsequent generation;
- (c) growing a progeny plant of a subsequent generation from said seed and crossing the progeny plant of a subsequent generation with itself or a different plant; and
- (d) repeating steps (b) and (c) for an additional 0-5 generations to produce a maize plant derived from the inbred line PH581.

Claim 26 (New): The method of claim 25, wherein the maize plant derived from the inbred line PH581 is an inbred maize plant.

Claim 27 (New): The method of claim 26, further comprising the step of crossing the inbred maize plant derived from the inbred line PH581 with a second, distinct inbred maize plant to produce an F1 hybrid maize plant.

Claim 28 (New): A method for developing a maize plant in a maize plant breeding program using plant breeding techniques comprising employing a maize plant, or its parts, as a source of plant breeding material comprising using the maize plant of claim 11, or parts thereof, as a source of said breeding material.

Claim 29 (New): The method for developing a maize plant in a maize plant breeding program of claim 28 wherein plant breeding techniques are selected from the group consisting of recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, and transformation.

Claim 30 (New): The method of claim 29 wherein the plant breeding technique comprises the steps of:

- (a) obtaining the molecular marker profile of maize inbred line PH581;
- (b) obtaining an F1 hybrid seed for which maize inbred line PH581 is a parent;
- (c) inducing doubled haploidy of the F1 hybrid seed to create progeny without the occurrence of meiotic segregation; and
- (d) selecting progeny that retain the molecular marker profile of PH581.